

CLAIMS:

What is claimed is:

1. An asset management and communication system for a healthcare facility, including:
 - a server coupled to a database;
 - a plurality of tags coupled to a corresponding plurality of assets, each tag being configured to transmit a tag ID that is uniquely associated in the database with asset data describing the corresponding asset;
 - a first network coupled to the server including a plurality of first transceivers configured to receive the tag IDs and transmit the tag IDs and a transceiver ID to the server via the first network, whereby, in response to receipt of a tag ID and a transceiver ID from a transceiver, the server is configured to update the database with location information for the asset corresponding to the tag ID to indicate that the corresponding asset is adjacent the transceiver;
 - a second network coupled to the server including a plurality of access points; and
 - a plurality of portable client devices, each client device including a display and a transceiver configured to wirelessly transmit to the server via one of the plurality of access points a client device ID that is uniquely associated in the database with a user of the client device, whereby, in response to receipt of the client device ID, the server is configured to update the database with location information for the user to indicate that the user is within a reception range of the one access point.
2. The system of claim 1, further including an external network coupled to the server.
3. The system of claim 2, wherein the external network is the internet.
4. The system of claim 1, wherein the database is a distributed database having portions of data stored at a plurality of different physical locations.
5. The system of claim 1, further including a plurality of routers connected to the second network and the server, the routers being configured to process communications between the second network and the server.

6. The system of claim 1, wherein the first plurality of transceivers are mounted at a corresponding plurality of fixed locations within the facility.
7. The system of claim 1, wherein each of the plurality of client devices includes an interface configured to read information from the plurality of tags and write information for storage on the plurality of tags.
8. The system of claim 7, wherein each client device responds to information read from a tag via the interface by obtaining from the server asset data associated with the tag.
9. The system of claim 1, wherein each of the plurality of client devices is a thin client device.
10. The system of claim 1, wherein each of the plurality of client devices is configured to communicate with other client devices within a range of the client device without accessing an access point.
11. The system of claim 1, wherein the client device transceivers are configured to transmit and receive text, audio, and video content.
12. The system of claim 1, wherein each of the client devices includes a cellular telephone.
13. The system of claim 1, wherein each of the client devices includes one of the plurality of tags.
14. The system of claim 1, further including a plurality of workstations coupled to the first network.
15. The system of claim 14, wherein one of the workstations includes an interface configured to read information from and write information to any of the plurality of tags.
16. The system of claim 14, wherein each of the workstations includes a local database including a portion of the data stored in the database coupled to the server.
17. The system of claim 1, further including a nurse call server coupled to the server, the nurse call server being configured to respond to input signals from an input device operated by a user by transmitting a request signal to the server, the server being configured to respond to the request signal by transmitting a signal to a particular client device.
18. The system of claim 1, further including a nurse call server coupled to the server, the nurse call server being configured to respond to input signals

from an input device operated by a user by changing the status of an indicator.

19. The system of claim 1, further including a monitoring server coupled to the server, the monitoring server being configured to receive output data generated by a piece of equipment and to transmit the output data to the server.

20. The system of claim 1, wherein each of the client devices includes software configured to generate a plurality of screens on the display.

21. The system of claim 20, wherein the display is a touch sensitive display.

22. The system of claim 20, wherein the plurality of screens includes a log on screen having icons for facilitating access to the second network.

23. The system of claim 20, wherein the plurality of screens includes a users screen including a list of users authorized to access the second network.

24. The system of claim 20, wherein one of the plurality of screens includes a call person button, activation of which causes the client device to send a signal to a specified other client device to establish a communications link between the client device and the specified other client device.

25. The system of claim 20, wherein the plurality of screens includes a message screen having a record message button, activation of which causes the client device to record input signals from a microphone coupled to the client device.

26. The system of claim 25, wherein the message screen further includes a send message button, activation of which causes the client device to transmit a signal corresponding to the recorded input signals to a specified other client device.

27. The system of claim 1, wherein the asset data includes historical data describing past locations of the corresponding asset.

28. The system of claim 27, wherein the server is configured to automatically perform a plurality of operations based upon a plurality of predefined rules.

29. The system of claim 28, wherein one of the operations is updating the status of an asset based upon a current location of the asset and a past location of the asset.
30. The system of claim 28, wherein one of the operations is transmitting a signal to a particular client device based upon a current location of the asset and a past location of the asset.
31. The system of claim 28, wherein the asset data includes an access level associated with an asset, the server performing one of the plurality of operations based upon a rule including a determination of the access level of the asset.
32. The system of claim 1, wherein each of the client devices is configured to access the database to determine the location and status of an asset having asset data stored in the database.
33. The system of claim 32, wherein the database further includes a file linked to the asset data of the asset, the file including additional information about the asset.
34. The system of claim 32, wherein each of the client device displays is configured to generate an asset request button, activation of which causes the client device to transmit a request signal to the server, the server responding to the request signal by transmitting a notification to a person responsible for delivering requested assets.
35. The system of claim 34, wherein the each of the client device displays is further configured to receive a user-selected designation of an urgency level of a request.
36. An asset management system for a healthcare facility, including:
a workstation;
a database coupled to the workstation;
a plurality of tags coupled to a corresponding plurality of assets, each tag being configured to transmit a tag ID that is uniquely associated in the database with the corresponding asset; and
a plurality of transceivers positioned at fixed locations in the facility, each transceiver being configured to receive tag IDs and to transmit the tag IDs to the workstation with a transceiver ID that is uniquely associated in the database with the location of the transceiver, thereby enabling the workstation

to update location data in the database to indicate that the corresponding assets are adjacent the transceiver location;

wherein the workstation further includes an interface configured to read ID signals from tags, an input device for entering asset data describing the corresponding assets for storage in the database, and a display configured to display the location data.

37. The system of claim 36, wherein each of the tags further includes a memory, the workstation interface being configured to write data to the tag memories.

38. The system of claim 36, wherein the workstation interface is further configured to print information on labels for attachment to the tags.

39. The system of claim 36, wherein the workstation further includes software configured to generate a plurality of screens on the display.

40. The system of claim 39, wherein one of the screens is a create tag screen configured to permit a user to create a tag by entering asset data using the input device, and writing data to the tag using the interface.

41. The system of claim 39, wherein one of the screens is a patient data screen which includes asset data relating to patients having an associated tag.

42. The system of claim 36, further including a wired network coupled between the plurality of transceivers and the workstation.

43. The system of claim 36, wherein the database is a distributed database having portions of data stored at a plurality of different physical locations.

44. The system of claim 36, further including a plurality of portable client devices coupled to the workstation via a wireless network, each of the client devices including a transceiver configured to transmit information to the database and receive information from the database, and a display for displaying the information.

45. The system of claim 44, further including a plurality of additional workstations coupled to the workstation by a network, and a server coupled to the network, the server being configured to update the database.

46. The system of claim 44, wherein the plurality of client devices each include an interface configured to read information from the plurality of tags and write information for storage on the plurality of tags.

47. The system of claim 46, wherein each client device responds to information read from a tag via the interface by obtaining from a server asset data associated with the tag.

48. The system of claim 44, wherein each of the plurality of client devices is configured to communicate with other client devices within a range of the client device.

49. The system of claim 44, wherein each of the client devices includes one of the plurality of tags.

50. The system of claim 36, wherein the location data includes historical data describing past locations of the corresponding asset.

51. The system of claim 44, wherein each of the client devices is configured to access the database to determine the location and status of an asset having location data and asset data stored in the database.

52. An asset management and control system for a healthcare facility, including:

- a computer coupled to a database;

- a plurality of tags coupled to a corresponding plurality of assets, each tag being configured to transmit a tag ID that is uniquely associated in the database with the corresponding asset;

- a first sensor configured for mounting adjacent an opening through a barrier between a first area and a second area, the first sensor being coupled to the computer and configured to receive tag IDs from tags as corresponding assets are passed through the opening, and to transmit signals to the computer indicating the tag IDs, the computer determining from the transmitted signals that the corresponding assets moved into one of the first area and the second area.

53. The system of claim 52, wherein the first sensor is an RFID sensor.

54. The system of claim 52, further including a second sensor, the first sensor being configured to transmit signals indicating movement of assets into the first area, and the second sensor being configured to transmit signals indicating movement of assets into the second area.

55. The system of claim 54, further including an interface module coupled to the first sensor and the second sensor, the interface module being

configured to provide power to the sensors, interpret the signals from the sensors, and provide a serial output to the computer.

56. The system of claim 52, wherein the computer is configured to update a status of an asset based upon the determination that the asset moved into one of the first area and the second area.

57. The system of claim 56, wherein the computer is configured to generate a notification signal based upon the updated status of the asset.

58. The system of claim 57, wherein the notification signal is transmitted to a receiving device operated by a user.

59. The system of claim 57, wherein the notification signal is transmitted to an indicator, thereby changing a status of the indicator.

60. The system of claim 56, wherein the computer is configured to prevent movement of the asset through the opening based upon the updated status of the asset.

61. The system of claim 52, wherein the sensor is configured to write information to tags as corresponding assets are passed through the opening.

62. The system of claim 52, further including anti-collision software operated by the computer to permit processing of substantially simultaneously received tag IDs.

63. An asset management and communication system for a healthcare facility, including:

- a server coupled to a database;

- a plurality of tags coupled to a corresponding plurality of assets, each tag being configured to transmit a tag ID that is uniquely associated in the database with asset data describing the corresponding asset; and

- a plurality of portable client devices, each client device including a display and an interface for receiving the tag IDs, each client device responding to receipt of a tag ID by wirelessly transmitting the tag ID via a network to the server to access the associated asset data for viewing on the display.

64. The system of claim 63, wherein the database is a distributed database having portions of data stored at a plurality of different physical locations.

65. The system of claim 63, wherein each of the plurality of client devices is configured to communicate with other client devices within a range of the client device.
66. The system of claim 63, wherein each of the client devices includes one of the plurality of tags.
67. The system of claim 63, further including a plurality of fixed transceivers, each of the fixed transceivers being configured to receive tag IDs from the plurality of tags and to transmit the tag IDs along with a transceiver ID via a wired network to the server, thereby indicating that the assets corresponding to the tag IDs are located adjacent the fixed transceiver.
68. The system of claim 67, further including a plurality of workstations coupled to the wired network.
69. The system of claim 68, wherein one of the workstations includes an interface configured to read information from and write information to any of the plurality of tags.
70. The system of claim 68, wherein each of the workstations includes a local database including a portion of the data stored in the database coupled to the server.
71. The system of claim 63, wherein each of the client devices includes software configured to generate a plurality of screens on the display.
72. The system of claim 71, wherein each display is a touch sensitive display.
73. The system of claim 71, wherein the plurality of screens includes a log on screen having icons for facilitating access to a wireless network configured to facilitate communications between the plurality of client devices and the server.
74. The system of claim 73, wherein the plurality of screens includes a users screen including a list of users authorized to access the wireless network.
75. The system of claim 71, wherein one of the plurality of screens includes a call person button, activation of which causes the client device to send a signal to a specified other client device to establish a communications link between the client device and the specified other client device.

76. The system of claim 71, wherein the plurality of screens includes a message screen having a record message button, activation of which causes the client device to record input signals from a microphone coupled to the client device.
77. The system of claim 63, wherein the asset data includes historical data describing past locations of the corresponding asset.
78. The system of claim 63, wherein each of the client devices is configured to access the database to determine the location and status of an asset having asset data stored in the database.
79. The system of claim 63, wherein each of the client device displays is configured to generate an asset request button, activation of which causes the client device to transmit a request signal to the server, the server responding to the request signal by transmitting a notification to a person responsible for delivering requested assets.
80. The system of claim 63, wherein the server is configured to respond to receipt of a tag ID by automatically performing an operation based upon a predetermined plurality of rules.
81. The system of claim 80, wherein the operation includes sending a message to a particular client device.
82. The system of claim 80, wherein the server is configured to automatically modify the predetermined plurality of rules based upon historical data reflecting past operations performed in response to receipt of a tag ID.
83. A communication system for a healthcare facility, including:
a server coupled to a database;
a network coupled to the server; and
a plurality of portable client devices, each client device including a display and a transceiver configured to wirelessly transmit to the server via the network ID information corresponding to a current user, the server logging the current user in to the system if the ID information corresponds to one of a list of authorized users stored in the database and transmitting data representing any other users logged in to the system to the client device for viewing on the display.
84. The system of claim 83, wherein each client device further includes software configured to generate a first screen having a first icon, activation of

which causes the transceiver to transmit a call signal to the server via the network to establish an audio communication link between the current user and a selected other user.

85. The system of claim 83, wherein each of the plurality of client devices is a thin client device.

86. The system of claim 83, wherein each of the plurality of client devices is configured to communicate with other client devices within a range of the client device.

87. The system of claim 83, wherein the client device transceivers are configured to transmit and receive text, audio, and video content.

88. The system of claim 83, wherein each of the client devices includes a cellular telephone.

89. The system of claim 83, wherein each of the client devices includes software configured to generate a plurality of screens on the display.

90. The system of claim 83, wherein each display is a touch sensitive display.

91. The system of claim 89, wherein the plurality of screens includes a log on screen having icons for facilitating access to the network.

92. The system of claim 89, wherein the plurality of screens includes a users screen including a list of users authorized to access the network.

93. The system of claim 89, wherein the plurality of screens includes a message screen having a record message button, activation of which causes the client device to record input signals from a microphone coupled to the client device.

94. The system of claim 93, wherein the message screen further includes a send message button, activation of which causes the client device to transmit a signal corresponding to the recorded input signals to a specified other client device.

95. The system of claim 83, wherein each of the client devices is configured to access the database to determine the location and status of an asset having asset data stored in the database.

96. The system of claim 83, wherein each of the client device displays is configured to generate an asset request button, activation of which causes the client device to transmit a request signal to the server, the server responding

to the request signal by transmitting a notification to a person responsible for delivering requested assets.

97. The system of claim 96, wherein the each of the client device displays is further configured to receive a user-selected designation of an urgency level of a request.

98. An asset management and communications system for a healthcare facility, including:

- a server coupled to a database;

- a plurality of tags associated with a corresponding plurality of assets, each tag having a unique ID;

- a plurality of sensors, each sensor configured to read the tag IDs of tags adjacent the sensor and to transmit a signal to the server indicating that the tags are adjacent the sensor, thereby permitting the server to update the database with location information indicating that the tags are adjacent a known location of the sensor; and

- a plurality of portable client devices coupled to the server via access points positioned at known locations within the facility, each client device including a transceiver configured to transmit a unique ID signal to the server via an access point, thereby permitting the server to update the database with location information indicating that the client device is within a reception range of the access point;

- the client device transceivers being further configured to access the tag location information in the database.

99. An asset management and communication system for a healthcare facility, including:

- means for storing information;

- a plurality of tag means coupled to a corresponding plurality of assets for transmitting means for uniquely identifying an asset associated in the information storing means with asset data describing the corresponding asset;

- means for receiving the asset identifying means;

- means for transmitting the asset identifying means to the information storing means;

means for updating the information storing means with asset location data based upon receipt of the asset identifying means from the transmitting means;

a plurality of means for communicating, each communicating means including means for communicating with other communicating means, means for accessing data stored in the information storing means, and means for transmitting an identification signal to the updating means, the updating means responding to the identification signal by updating the information storing means with additional location data;

means, coupled to the information storing means, for sensing movement of assets through a barrier between two areas;

means, coupled to the information storing means, for writing information to the tag means; and

means, coupled to the information storing means, for displaying data stored in the information storing means.